



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D350-748-203
Job Sheet 164645



Part No: D350-748-203

Job Qty: 1 ea

Part Name: AS350 / AS355 Stainless Steel Aft Crosstube



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 9/30/17

Job Tracking No:

Due Date: 10/31/17

Created By: Mario Poulin

Type: Stock

Description:

Customer: Air Methods Corporation (CAMET01)

7301 South Peoria Street Englewood, CO, 80112 USA ph:(303) 792-7400

Note: DWG REV A IPP REV:A 15.03.23 NEW ISSUE DD VERF;JLM

Ship Via:

Bill of Materials

Part/Part Name	Part Note	Serial No	Quantity	Location
D350-748-203	DWG REV A IPP REV:A 15.03.23 NEW ISSUE DD VERF;JLM		0.000	
AS350 / AS355 Stainless Steel Aft Crosstube				
AETC-1032			0.000	
Insert				
AN4-41A			0.000	
Bolt				
AN4-6A			0.000	
Bolt				
AN5-32A			0.000	
Bolt				
D350-748-243TRN	DWG REV A IPP Rev: PRELIM New Issue LL 12.05.08		0.000	
Crosstube Installation, High Aft				
D3500-1	DWG REV C IPP Rev:A New Issue 06-06-15 JLM		0.000	
Saddle				
D3501-1	DWG REV A IPP Rev:A New Issue 06-05-09 JLM		0.000	
Bushing				
D3502-1	DWG REV B IPP Rev:A New Issue 06-07-06 JLM IPP Rev:B Add tooling hole 07-03-28 Esr rev C added DT9430 08.11.03 EC verified by:DD		0.000	
Support				
D5123-7	DWG REV D IPP REV:A 15.03.19 NEW ISSUE DD VERF;JLM IPP REV:B 16-11-11 AS PER DWG REV.D DD VERF;JLM		0.000	
Clamp Cushion				
MS21042L4			0.000	
Nut				
MS21042L5			0.000	
Nut				
MS21920-20			0.000	
Clamp				
MS51958-63			0.000	
Screw				
NAS1149C0363R			0.000	
Washer				
NAS1149D0463J			0.000	
Washer				
NAS1149D0563J			0.000	
Washer				

Job Routing

Operation	Qty	Standard	Workcenter/Supplier
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DART
AEROSPACE
cnn7581

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K64 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

DART
AEROSPACE

S010261

AS350 / AS355 Stainless Steel Aft Crosstube

PART NO: D350 - 748 - 203
Revision:
Operation: Packaging
Change No:

Mfg Date: 11/15/17
Job No: 164645

osstube

1-203

eration
Mfg Date: 11/07/17
Job No: 164645

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K64 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Aerospace Ltd.
berdeen Street
sbury, ON K64 1K7
A
613 632-5200
sales@dartaero.com
rtaerospace.com

PART NO: D350 - 748 - 203
Revision:
Operation: QC
Change No:

Mfg Date: 11/15/17
Job No: 164645

Op No		Due Date	Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time
90	Start up Operation	1 Ea 10/30/17	0.00	0.00	Start up container	
100	DC	1 pcs 10/30/17	0.00	0.00	DC	
110	CNC Bend Crosstubes	1 pcs 10/30/17	5.40	2.44	CNC Bend Crosstube	
120	Crosstubes	1 pcs 10/30/17	0.00	0.00		
127	QC	1 pcs 10/30/17	0.00	0.00	QC15	
128	Crosstubes	1 pcs 10/30/17	0.00	1.98	Crosstube	
130	Crosstubes	1 pcs 10/30/17	0.00	1.98	Crosstube	DAG
140	QC	1 pcs 10/30/17	0.00	0.00	QC6	38
174	Outsource	1 pcs 10/30/17	0.00	0.00	Outsource2	9-89
176	Packaging	1 pcs 10/30/17	0.00	0.00	Packaging2	
178	QC	1 pcs 10/30/17	0.00	0.00	QC5	17-11-2017
180	SprayPaint	1 pcs 10/30/17	0.00	1.08	Spray Paint	NOV 1 2017
190	QC	1 pcs 10/30/17	0.00	0.00	QC14	38
200	Crosstubes	1 pcs 10/31/17	0.00	1.98	Crosstube	NOV 1 2017
210	QC	1 pcs 10/31/17	0.00	0.00	QC5	38
220	Packaging	1 pcs 10/31/17	0.00	0.00	Packaging1	9-89
230	QC	1 pcs 10/31/17	0.00	0.00	QC4	
240	Packaging	1 pcs 10/31/17	0.00	0.00	Packaging3	
250	QC21-FG	1 Ea 10/31/17	0.00	0.00	QC21	

Part Op 100 - Photocopy bluefile & type labels per PPPD350-748-201 CHG001

Descriptions: 110 - Bend tube as per Dwg D350-748-243 using CNC bender program D350A and Folio FT

120 - ****VERIFY CROSSTUBE DIMENSIONS AS PER DWG****

127 - ***MARK CUT LINES***

128 - CUT TUBE AT HEIGHT ON FAI SHEET

130 - 2- Drill Tube as per Dwg D350-748-243 Using DT8876 Drill Jigs, 4- Engrave Part # and Batch # as per Dwg D350-748-243 5-Remove all marks from tube within limits of D350-748-243

174 - ISSUE P/O TO ACCUREN:

180 - ***VERIFY BY _____ BATCH # TO MATCH W/O cleaner 132520 Adhesion 138021

190 - Then, Wrap in plastic bag to protect from scratches

200 - INSTALL GROUND WIRE INSERT, THEN INSERT SCREW AND WASHER 2-Install supports with Proseal 890 per D350-748-243 and QSI 015 3-Install supports clamps Using Dt8876 as per Dwg D350-748-243, Torque to 60-80 IN-LBS.

210 - ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***

230 - ***VERIFY BY _____ BATCH # TO MATCH W/O

240 - Identify and pack for shipping as per PPPD350-748-203

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	D350-748-243TRN	1	0	0	0
200-Crosstubes	AETC-1032	1	0	0	0
	D3502-1	2	0	0	0
	D5123-7	2	0	0	0
	MS21920-20	2	0	0	0
	NAS1149C0363R	1	0	0	0
220-Packaging	AN4-41A	8	0	0	0
	AN4-6A	16	0	0	0
	AN5-32A	4	0	0	0
	D3500-1	4	0	0	0
	D3501-1	16	0	0	0
	MS21042L4	24	0	0	0
	MS21042L5	4	0	0	0
	MS51958-63	1	0	0	0
	NAS1149D0463J	32	0	0	0
	NAS1149D0563J	8	0	0	0

Part Specifications

Specifications could not be found.

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Page 1

Item ID: D350-748-203

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017 Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/1/2017 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

W1 ^{DAS}
21
⁹⁻⁸⁹

Date:

17/7/27

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D350-748-243

A

100

Document Control

0.00

100

DOCUMENT CONTROL

DC

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile & type labels per PPPD350-748-201

CHG001

110

BENDING MACHINE - CROSSTUBES

0.79

110

CNC Bend 2

Memo

1.12

CNC Alpha 160 Bender

Bend tube as per Dwg D350-748-243 using CNC bender program D350A and Folio FT

*****UNDER BEND .225" PER SIDE*****

****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****

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Item ID: D350-748-203**Accept*****N900040100*****Setup Start*****NS1*****Revision ID:****Stop *NS2*****Item Name:** AS350 / AS355 Stainless Steel Aft Crosstube**Start Date:** 8/3/2017 **Start Qty:** 1.00 ***1*****Cust Item ID:****Required Date:** 9/1/2017 **Req'd Qty:** 1.00 ***1*****Customer:****Reference:****Approvals:** **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____**Run Start*****NR1*****QC:** _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____**Stop*****NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

127 QC15- Crosstube Dimensional Check 0.00

127

QC

Memo

0.00

Quality Control

MARK CUT LINES

128 0.00

128

Crosstubes

Memo

1.80

Crosstubes

CUT TUBE AT HEIGHT ON FAI SHEET

VERF HEIGHT _____ BY QC 15 LEVEL INSPECTOR _____

VERF TWIST _____ BY QC15 LEVEL INSPECTOR _____

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Item ID: D350-748-203**Accept*****N900040100*****Setup Start *NS1*****Revision ID:****Stop *NS2*****Item Name:** AS350 / AS355 Stainless Steel Aft Crosstube**Start Date:** 8/3/2017 **Start Qty:** 1.00 ***1*****Cust Item ID:****Required Date:** 9/1/2017 **Req'd Qty:** 1.00 ***1*****Customer:****Reference:****Approvals:** **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____**Run Start *NR1*****QC:** _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____**Stop *NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

174 Outsource process - NDT per QSI038 4.1 0.00

174

Outsource2

Memo

48.00

Outsource process - NDT

ISSUE P/O TO ACCUREN: _____

176 Receive & Inspect for Damage & Mat'l Certs 0.00

176

Packaging

Memo

0.00

Packaging

IX SpA 11-15

178 QC5- Inspect part completeness to step on W/O 0.00

178

QC

Memo

0.00

Quality Control

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Item ID: D350-748-203

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/1/2017

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

180

Spray Painting per QSI005 4.2

0.00

180

SprayPaint

0.45

SprayPaint

Memo

***VERIFY BY _____ BATCH # TO MATCH W/O

***VERIFY BY _____ PART # TO MATCH

W/O _____

MASK SCRIBE B# & P# AND VERIFY

1. Apply Axalta 13205S Cleaner inside and outside crosstube per QSI 005 4.1.4

BATCH: _____

2. Axalta 230S Metalok inside and outside crosstube per QSI 005 4.1.4

BATCH: _____

3. Prime inside and outside crosstube per QSI 005 4.2

BATCH: _____

4. Paint outside of crosstube per QSI 005 4.2

BATCH: _____

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Item ID: D350-748-203**Accept*****N900040100*****Setup Start*****NS1*****Revision ID:****Stop*****NS2*****Item Name:** AS350 / AS355 Stainless Steel Aft Crosstube**Start Date:** 8/3/2017 **Start Qty:** 1.00***1*****Cust Item ID:****Required Date:** 9/1/2017 **Req'd Qty:** 1.00***1*****Customer:****Reference:****Approvals:** **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____**Run Start*****NR1*****QC:** _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____**Stop*****NR2*****Sequence ID/
Work Center ID****Operation
Description****Set Up/
Run Hours****Tool ID****Tool #****Plan
Code****Accept
Qty****Reject
Qty****Reject
Number****Insp.
Stamp**

190

QC14- Inspect Spray Paint

0.00

190

QC

Memo

0.00

Quality Control

Then, Wrap in plastic bag to protect from scratches

***VERIFY BY _____ BATCH # TO MATCH W/O

***VERIFY BY _____ PART # TO MATCH
W/O _____

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Item ID: D350-748-203

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Start Qty: 1.00

1

Cust Item ID:

Required Date: 9/1/2017

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

0.00

2000

Crosstubes

Crosstubes

Memo

0.56

INSTALL GROUND WIRE INSERT, THEN INSERT SCREW AND WASHER

***LIMIT AIR PRESSURE TO 50 PSI WHEN INSTALLING AETC-1032
INSERT AND ONLY EXPAND INSERT ONCE***1-Abrade mating surfaces of support and crosstube with 180 grit sandpaper,
clean the area with MEK or equivalent as per dwg

2-Install supports with Proseal 890 per D350-748-243 and QSI 015

A/R Proseal 890

Batch: _____

EXP: _____

3-Install supports clamps Using Dt8876 as per Dwg D350-748-243, Torque to
60-80 IN-LBS.

PROSEAL CURE TIME 72 HOURS:

Start: _____

Finish: _____

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Item ID: D350-748-203**Accept*****N900040100*****Setup Start*****NS1*****Revision ID:****Stop*****NS2*****Item Name:** AS350 / AS355 Stainless Steel Aft Crosstube**Start Date:** 8/3/2017**Start Qty:** 1.00***1*****Cust Item ID:****Required Date:** 9/1/2017**Req'd Qty:** 1.00***1*****Customer:****Reference:****Approvals:****Process Plan:** _____**Date:** _____**Tooling:** _____**Date:** _____**Run****Start*****NR1*****QC:** _____**Date:** _____**SPC (Y/N):** _____**Date:** _____**Stop*****NR2*****Sequence ID/
Work Center ID****Operation
Description****Set Up/
Run Hours****Tool ID****Tool #****Plan
Code****Accept
Qty****Reject
Qty****Reject
Number****Insp.
Stamp**

210

QC5- Inspect part completeness to step on W/O

0.00

210

0.00

QC

Memo***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED
FOR 72HOURS AS PER DWG.***

***VERIFY BY _____ BATCH # TO MATCH W/O

***VERIFY BY _____ PART # TO MATCH

W/O _____

Quality Control

220

Pick Kit

0.00

220

0.00

Packaging

Memo

Packaging

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1 64645

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NS1

Stop *NS2*

Customer:

Run Start *NR1*

Stop ***NR2***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

[illegible]

Picklist Print

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Work Order ID: 164645

164645

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 15.03.23 NEW ISSUE DD VERF;JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D350-748-243TRN

Manufactured

No

110

Each

1.0000

1

1

D350-748-243TRN

Crosstube Installation, High Aft

Location

Loc Qty

Loc Code

LG014

1

151840

1

D3502-1

Manufactured

No

220

Each

58.0000

2

2

D3502-1

Support

Location

Loc Qty

Loc Code

LG052

58

150010

14

150683

2

158881

20

161764

22

D5123-7

Manufactured

No

220

Each

104.0000

2

2

D5123-7

Clamp Cushion

Location

Loc Qty

Loc Code

LG052

104

151551

12

153236

92

Picklist Print

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Work Order ID: 164645

164645

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

AETC-1032

Purchased

No

220

Each

56.0000

1

1

AETC-1032******

Insert

LocationLoc QtyLoc Code

LG050

6

m133732

6

st555

50

m137335

50

NAS1149C0363R

Purchased

No

220

Each

281.0000

1

1

NAS1149C0363R******

Washer

LocationLoc QtyLoc Code

266

184

m137495

184

FP001

91

m133077

91

GA

6

m133077

6

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Shop Packet Print

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Picklist Print

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Work Order ID: 164645

164645

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

MS21920-20

Purchased

No

220

Each

171.0000

2

2

MS21920-20******

Clamp

LocationLoc QtyLoc Code

FG

2

122254

2

LG050

167

m137587

50

m137710

42

m137820

25

m137963

25

m138040

25

LG056

2

m128650

1

m132675

1

MS51958-63

Purchased

No

220

Each

90.0000

1

1

MS51958-63******

Screw

LocationLoc QtyLoc Code

ST267

90

m134962

90

NAS1149D0563J

Purchased

No

220

Each

1,750.000

8

8

NAS1149D0563J******

Washer

LocationLoc QtyLoc Code

GA

36

m135774

36

ST260a

700

m138040

700

ST263

1014

m137587

314

m137820

700

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Work Order ID: 164645

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Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

MS21042L4

Purchased

No

220

Each

2,609.000

24

24

MS21042L 4

Nut

Location

Loc Qty

Loc Code

FP001

10

m133363

10

GA

11

m135058

11

OVER007

1000

m138084

1000

ST303

1588

m137402

199

m137680

389

m137988

1000

MS21042L5

Purchased

No

220

Each

585.0000

4

4

MS21042L 5

Nut

Location

Loc Qty

Loc Code

GA

12

m127813

12

ST303

573

m137587

373

m137963

200

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Work Order ID: 164645

164645

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

AN4-41A

Purchased

No

220

Each

414.0000

8

8

AN4-41A******

Bolt

LocationLoc QtyLoc Code

over003

320

m137544

120

m137951

125

m138045

75

ST342

94

m136851

24

m137320

29

m137464

41

D3501-1

Manufactured

No

220

Each

667.0000

16

16

D3501-1******

Bushing

LocationLoc QtyLoc Code

ST037

3

159311

3

ST038

264

161783

120

162915

144

ST038A

400

163502

200

163863

200

Picklist Print

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Work Order ID: 164645

164645

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

NAS1149D0463J

Purchased

No

220

Each

4,033.000

32

32

NAS1149D0463.J

Washer

Location

Loc Qty

Loc Code

GA

558

M135056

40

M137699

518

ST260a

2600

M137988

600

M138084

2000

ST263

875

M137371

256

M137699

619

AN5-32A

Purchased

No

220

Each

344.0000

4

4

AN5-32A

Bolt

Location

Loc Qty

Loc Code

over004

245

m137853

120

m137951

75

m138045

50

ST336

99

m137464

99

D3500-1

Manufactured

No

220

Each

68.0000

4

4

D3500-1

Saddle

Location

Loc Qty

Loc Code

ST406

68

151743

4

158741

40

161727

24

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Work Order ID: 164645

164645

Parent Item: D350-748-203

D350-748-203

Parent Item Name: AS350 / AS355 Stainless Steel Aft Crosstube

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

AN4-6A

Purchased

No

220

Each

1,227.000

16

16

AN4-6A

BOLT

Location

Loc Qty

Loc Code

over003

1000

M137951

500

M138045

500

ST345

227

M137464

227

Item	Qty -243	Part Number	Description
1	X	D350-748-243	CROSSTUBE ASSEMBLY (AS 350/355 HI AFT)
2	1	D6021-125	CROSSTUBE
3	2	D3502-1	SUPPORT
4	2	D5123-7	CLAMP CUSHION
5	1	AETC-1032	INSERT
6	2	MS21920-20 OR MS21920-21/-22	CLAMP (PER DART SPEC. M-MS21920-20/-21/-22)
7	1	NAS1149C0363R	WASHER (OR AN960C10)
8	1	NAS1635-3-8	SCREW (OR MS51958-63)
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6021-125
FINISHED LENGTH AFTER TURNING = 124.70±0.08 (AFTER BENDING/TRIMMING = 122.70 REF)
- 2) FINISH: PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCE: PER DART QSI 018 UNLESS OTHERWISE NOTED.
WALL THICKNESS ECCENTRICITY PER DART QSI 038 7.2
MIN. ALLOWABLE WALL IS -0.020 FROM NOMINAL
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: DART PART NUMBER "D350-748-243" AND BATCH NUMBER ON INSIDE OF CUFF
PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 29.85 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE, EXCEPT FOR Ø0.290 HOLE.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.

TURNING

- 10) BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.

BENDING

- 11) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES PER SIDE. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D. ON TOP HALF OF BEND, AND 8% ON BOTTOM HALF OF BEND.
- 12) MAX AMPLITUDE OF RIPPING ALONG BENT PORTION OF THE TUBE IS 0.030 (ZN A1-3)
- 13) MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE MAY BE NO LARGER THAN 0.38 (ZN C1-3).

ASSEMBLY

- 14) TO INSTALL D3502-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.02" TO 0.05" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 80 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 164645

WM 17/7/27

DEO ATTACHED

RELEASED

2015 MAR 18

RELEASED

2015 MAR 18

UNDER REVIEW

15/4/25

15/4/25

CK

16/2/25

A	NEW ISSUE	CP	15.01.21
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	15.01.21		

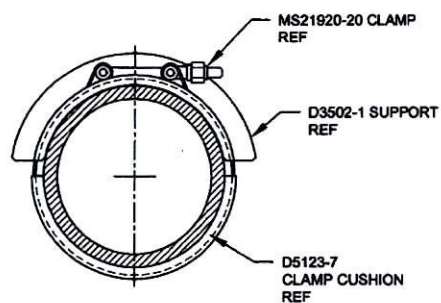
DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D350-748-243
REV. A
SHEET 1 OF 4

TITLE CROSSTUBE (AS 350/355 HI AFT)
SCALE NTS

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**D350-748-243
ASSEMBLY DETAIL**



SECTION A-A D4-2
SCALE 6X

INSTALL THIS SIDE ONLY, AFTER FINISH:
AETC-1032 INSERT
NAS1149C0383R WASHER
NAS1635-3-8 SCREW

14 15
D3502-1 SUPPORT
MS21920-20 CLAMP (OR -21/-22)
D5123-7 RUBBER CUSHION
2 PL

D350-748-243
BENT TUBE

DEO ATTACHED

RELEASED

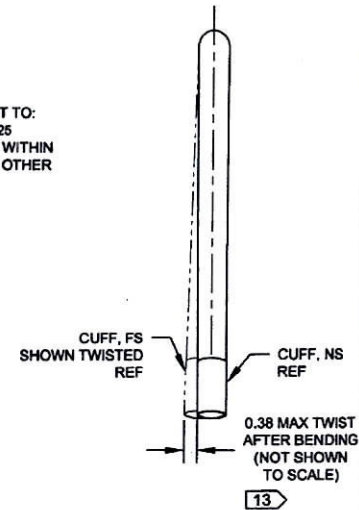
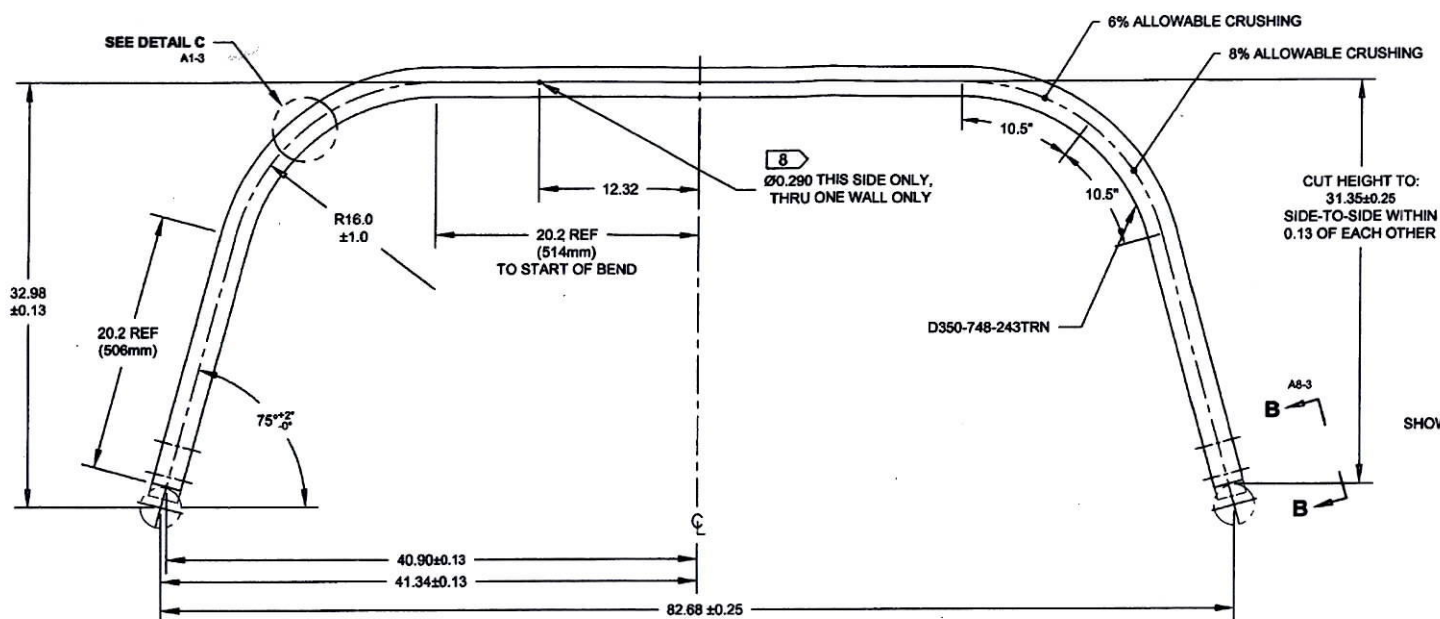
2015 MAR 18 97

UNDER REVIEW

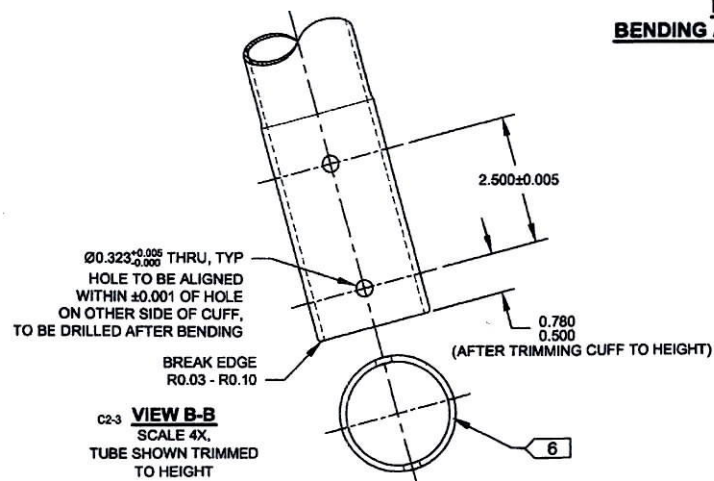
15/1/20

OK
9/16/29

DESIGN	GP	DART AEROSPACE LTD	
DRAWN	GP	HAWKESBURY, ONTARIO, CANADA	
CHECKED	A.P.	DRAWING NO.	REV. A
MFG. APPR.	7/1/1	D350-748-243	SHEET 2 OF 4
APPROVED	7/1/1	TITLE	SCALE
DE APPR.	7/1/1	CROSSTUBE (AS 350/355 HI AFT)	NTS
DATE	15.01.21	COPYRIGHT © 2015 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	



D350-748-243
BENDING AND DRILLING DETAIL 11

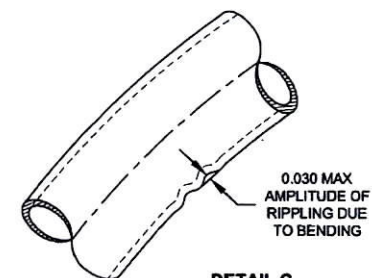


DEO ATTACHED
RELEASED

2015 MAR 18 *up*

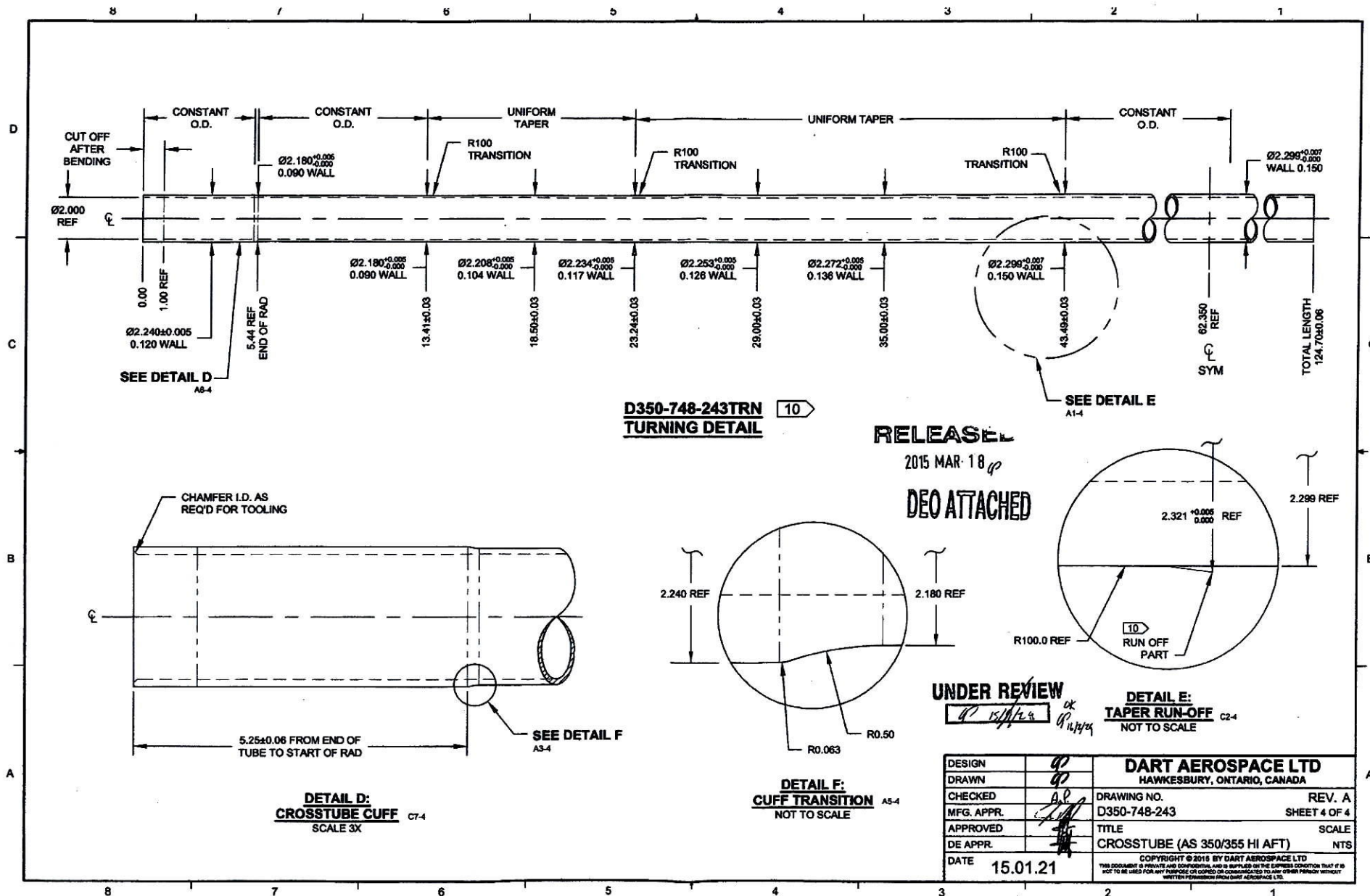
UNDER REVIEW

17 15/11/18 OK 4/6/18



DETAIL C D7-3
SCALE 4X
RIPLEING EXAGGERATED

DESIGN	90	DART AEROSPACE LTD	
DRAWN	90	HAWKESBURY, ONTARIO, CANADA	
CHECKED	A.P.	DRAWING NO.	REV. A
MFG. APPR.	<i>[Signature]</i>	D350-748-243	SHEET 3 OF 4
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	CROSSTUBE (AS 350/355 HI AFT)	NTS
DATE	15.01.21	COPYRIGHT © 2015 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



DRAWING NO. D350-748-243	TITLE CROSSTUBE	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D350-748-243-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>ap</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>[Signature]</i>	APPROVED <i>[Signature]</i>		DE APPR. <i>[Signature]</i>		
DATE 15.11.18	DATE 15.11.18	DATE 16.02.19	DATE FEB 19 2016		DATE 2016.02.19		

AMEND NOTE 2 (SHEET 1) AS FOLLOWS:

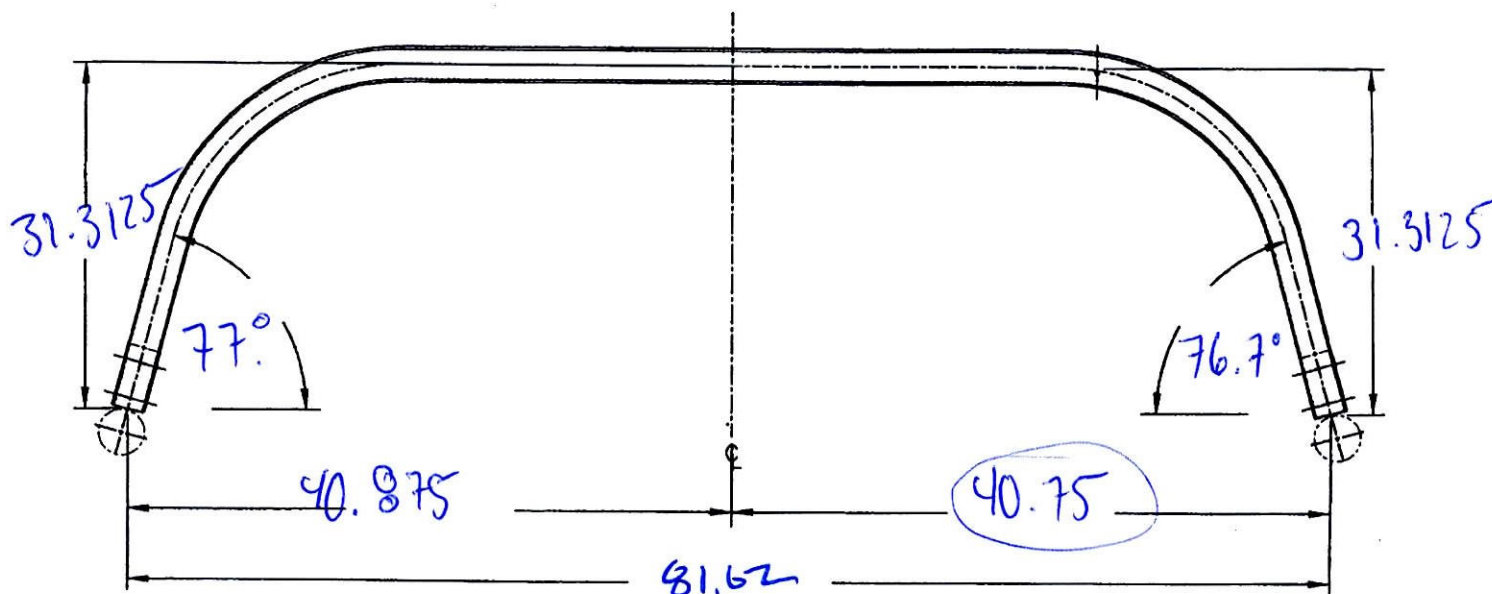
- 2) FINISH: PREPARE SURFACE PER DART QSI 005 4.1.4
 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
 PAINT OUTSIDE PER DART QSI 005 4.2
 OR
 POWDER COAT WHITE (4.3.5.2) PER DART QSI 005 4.3

RELEASED
 2016-02-26
EN 16-534

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DART AEROSPACE LTD		Work Order: 164645
Description: Crosstube High Aft, SS (AS350/355)		Part Number: D350-748-203
Inspection Dwg: D350-748-243 Rev: A		Page 1 of 1

Required Dimension	Min	Max
Height	31.10	31.60
1/2 Span	40.77	41.03
Angle	75	77
Total Span	81.54	82.06
Bending Passes	7	--
Crushing	--	8%
Twist	--	0.38



	Side A	Side B
Bending Passes	34	34
Crushing	6.77%	5.91%
Comments		
twist = 0.092		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	15.09.09	New Issue	KJ	

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS					
Part No. _____		Skid-tube ☐	Cross tube ☒	Water Jet ☐	Engineering ☐		
NCR No. _____		Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐		
		Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐		
		Large Fab ☐	Composite ☐	Supplier ☐			

Date : 17/11/2 Step #: 110 QTY Effective : _____

MRB (QSI042) Approval

DAS
12
9-89

17/11/2

Description Work Order Deviation

Disposition

One width under tolerance after
bonding.

Acceptable. Total width in
tolerance.

Completed By

DAS
12
9-89

17/11/2Lead hand / Supervisor
Approval VerificationQC / QA Coordinator
Approval**Root Cause**

Environment ☐	No Re-verification ☐
Design ☐	Operator ☐
Doc/Data ☐	Offset/Setup ☐
Equip/Tooling ☐	Supplier ☐
Handling/Pre ☐	Training ☐
Material ☐	Use for Testing ☐
Internal Transport ☐	Poor Information ☐
Tribal Knowledge ☐	Rushing ☐
LOA ☐	Product Improvement ☐
Substation ☐	Process Improvement ☐
Past Expiry Date ☐	Manufacturing Process ☐
Misidentified ☐	Past Due ☐

Pressure/Forced ☐
 Bending ☐
 Centre Not Concentric ☐
 Cracks ☐
 Crimp/Kink/Ripple/Wave ☐
 Cuffs ☐
 Crushing ☐
 Heat Treat ☐
 Wave/Twist in Tube ☐
 Marks/Chatter ☐

FAULT CATEGORY

Temperature/Cure ☐
 Set-up ☐
 BOM/Route ☐
 Broken/Damage/Defect ☐
 Inspection Incomplete/Unqualified ☐
 Contamination ☐
 Countersink ☐
 Cut Too Short ☐
 Instructions Incomplete/Unclear ☐
 Drill Holes ☐

Power Loss/Surge ☐
 Folio/Program ☐
 Grain ☐
 Weld ☐
 Wrong Stock Pulled ☐
 Out of Sequence ☐
 Off-set ☐
 Misabeled ☐
 Fit/Function ☐
 Misaligned/off center ☐

Positioned Wrong ☐
 Outside Dimensions ☐
 Over/Under tolerance ☐
 Part Incorrect ☐
 Part Lost/Missing ☐
 Part Moved ☐
 Drawing ☐
 Finish ☐
 Misread ☐
 Turning Sequence ☐

OTHER : _____



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO038325

Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

PO No: PO038325
PO Date: 11/10/17
Due Date: 11/10/17
Purchase Order Revision:
Revision Date:
Ship-To Contact: Baker, Diane
Phone: dbaker@dartaero.com

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

Items												
Line Item	Job	Part	Rev	Description	Item Tax	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	166319	D4883-7	-	End Fitting Outsource process - NDT per QSI038 4.1 Issue P/O: _____ LPI Per ASTM 1417 LEVEL 2 Certificate of conformaty is required.		Firmed	11/10/17	3 pcs	0 pcs	3 pcs	\$76.00/pcs	\$228.00
2	166320	D4880-1	-	Strut		Firmed	11/10/17	4 pcs	0 pcs	4 pcs	\$76.00/pcs	\$304.00
3	164477	D119-796-141	-	Fwd Crosstube Installation Without Step (No Hardware) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038Or Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order		Firmed	11/10/17	1 pcs	0 pcs	1 pcs	\$76.00/pcs	\$76.00
4	158989	D350-748-203	-	AS350 / AS355 Stainless Steel Aft Crosstube ISSUE P/O TO SKY SERVICE: _____		Firmed	11/10/17	1 pcs	0 pcs	1 pcs	\$76.00/pcs	\$76.00
5	164645	D350-748-203	-	AS350 / AS355 Stainless Steel Aft Crosstube ISSUE P/O TO SKY SERVICE: _____		Firmed	11/10/17	1 pcs	0 pcs	1 pcs	\$76.00/pcs	\$76.00
6	164731	D350-748-103	-	AS350 / AS355 Stainless Steel Fwd Crosstube ISSUE P/O TO SKY SERVICE: _____		Firmed	11/10/17	1 pcs	0 pcs	1 pcs	\$76.00/pcs	\$76.00
7	157387	D350-748-103	-	AS350 / AS355 Stainless Steel Fwd Crosstube ISSUE P/O TO SKY SERVICE: _____		Firmed	11/10/17	1 pcs	0 pcs	1 pcs	\$76.00/pcs	\$76.00
8	162388	D119-796-241	-	Aft Crosstube Installation Without Step (No Hardware)		Firmed	11/10/17	1 pcs	0 pcs	1 pcs	\$76.00/pcs	\$76.00

**skyservice****Work Order Traveler**
Sky Service F.B.O. Inc.

PO 038325

10105 Ryan Avenue, Dorval, Quebec, H9P 1A2

TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO33970	Customer:	Dept: NDT YUL	Reference: PO038325
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON 8 CROSSTUBES , 3 END FITTINGS AND 4 STRUTS AS PER PO038325

3 END FITTINGS , P/N# D4883-7 , J/S# 166319

4 STRUTS , P/N# D4880-1 , J/S# 166320

2 STAINLESS STEEL FWD CROSSTUBES , P/N# D350-748-103 , J/S# 157387 , 164731

✓ 2 STAINLESS STEEL AFT CROSSTUBES , P/N# D350-748-203 , J/S# 164645 , 158989

2 AFT CROSSTUBES , P/N# D119-796-241 , J/S# 163790 , 162388

2 FWD CROSSTUBES , P/N# D119-796-141 , J/S# 164477 , 165700

SPA-11-15

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-13						NOV 10 2017	
NO CRACK FOUND							
PEN. ZL-56, MPO13600, CLEANER SKC-S MPO13923 , EMU. MPO15896, DEV. MPO11715 , UV LIGHT M-20142							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date:
Name: RAFIK MELIKIAN		NOV 10 2017